

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
KATSUhide MIYAKE, ET AL.	)	Examiner: Not Yet Assigned
Application No.: Not Yet Assigned	)	Group Art Unit: Not Yet Assigned
Filed: Currently herewith	)	
For: $\beta$ 1,3-GALACTOSYLTRANSFERASE	)	
AND DNA ENCODING THE SAME	)	July 6, 2001

Commissioner for Patents  
Washington, D.C. 20231

SUBMISSION OF COMPUTER READABLE FORM UNDER 37 C.F.R. § 1.821(e)

Sir:

Applicants submit herewith a computer readable form under 37 C.F.R.

§ 1.821(e). The content of the computer readable form and the Sequence Listing filed herewith are the same.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

Attorney for Applicants  
Lawrence S. Perry  
Registration No. 31,865

FITZPATRICK, CELLA, HARPER & SCINTO  
30 Rockefeller Plaza  
New York, New York 10112-3801  
Facsimile: (212) 218-2200  
LSP/ac

11/18/74 1040/74 257354

<120> Beta 1,3-galactosyltransferase and DNA encoding the same

<150> JP 2001-392

&lt;160&gt; 8

&lt;170&gt; PatentIn Ver. 2.0

 $\langle 210 \rangle$  1

<211>

&lt;212&gt; PRT

<213> Streptococcus agalactiae Type Ib

<400> 1

Met Asn Tyr Ser Ile Ile Met Ser Val Tyr Asn Glu Pro Leu Asn Tyr  
1 5 10 15

Val Arg Asp Ser Val Glu Ser Ile Leu Asn Gln Thr Leu Thr Asp Phe  
20 25 30

Glu Phe Ile Ile Val Ile Asp Asn Pro Ser Arg Gly Asp Leu Lys Gln  
35 40 45

Phe Leu Thr Glu Tyr Ser Val Val Asp Asn Arg Ile Lys Ile Leu Leu  
50 55 60

Asn Glu Glu Asn Ile Gly Leu Ala Ser Ser Leu Asn Lys Ala Val Lys  
65 70 75 80

Ile Ser Lys Gly Glu Tyr Ile Phe Arg Met Asp Ala Asp Asp Ile Ser  
85 90 95

Tyr Pro Ser Arg Phe Asp Lys Gln Ile Arg Phe Met Glu Glu Asn Ser  
100 105 110

Leu Asp Phe Ser Ala Thr Leu Ile Glu Leu Ile Asp Gln Lys Gly Asn  
115 120 125

Leu Val Tyr Lys Gln Arg Glu Ser Asn Lys Ile Tyr Leu Thr Asn Asp  
130 135 140

Ile Arg Lys Met Leu Leu Asn Arg Ser Ile Leu Ala His Pro Thr Trp  
145 150 155 160

Cys Val Lys Lys Lys Val Phe Asp Lys Leu Met Gly Tyr Arg Asp Leu  
165 170 175

Val Pro Val Glu Asp Tyr Asp Phe Ala Ile Arg Gly Ala Leu Ala Asp  
180 185 190

Phe Lys Ile Gly Leu Leu Asn Lys Val Leu Leu Gln Tyr Arg Leu Asn  
195 200 205

Glu Asn Gly Ile Ser Gln Thr Asn Lys Phe Lys Gln Tyr Ile Tyr Ser  
210 215 220

Ala Ile Leu Gln Asp Phe Tyr Lys Glu Lys Ser Tyr Ile Asp Ile Thr  
225 230 235 240

Lys Ile Thr Asn Tyr Phe Gln Glu Tyr Val Ile Lys Lys Arg Tyr Thr  
245 250 255

Gln Gln Glu Leu Ser Lys Tyr Phe Glu Leu Lys Ser Thr Pro Ser Ile  
260 265 270

Thr Ile Arg Lys Leu Tyr Ile Cys Leu Tyr Leu Tyr Phe Lys Ser Pro  
275 280 285

Leu Val Arg Arg Leu Leu Ile Asn Asp Ile Asn Ile Leu Val Leu Lys  
290 295 300

Leu Phe Gly Gly Glu Lys Gln Ser Asp  
305 310 313

<210> 2

<211>

<212> DNA

<213> Streptococcus agalactiae Type Ib

<400> 2

atg aat tat agt atc att atg tgc gta tat aat gag cct tta aat tat 48  
Met Asn Tyr Ser Ile Ile Met Ser Val Tyr Asn Glu Pro Leu Asn Tyr  
1 5 10 15

gtg aga gat tca gta gaa tct ata tta aat caa acg ctt act gat ttt 96  
Val Arg Asp Ser Val Glu Ser Ile Leu Asn Gln Thr Leu Thr Asp Phe  
20 25 30

gag ttc ata att gtc att gat aat cca agt aga ggt gat tta aag caa 144





# CONGRATULATIONS

# CONGRATULATIONS

# CONGRATULATIONS



255										260										265																			
caa atg acg ggg cta atg ttt aag tta gac gat gat cct aga att act																									1468														
Gln Met Thr Gly Leu Met Phe Lys Leu Asp Asp Asp Pro Arg Ile Thr																																							
270										275										280																			
aaa ata gga aaa ttt att cga aaa aca agc ata gat gag ttg cct caa																									1516														
Lys Ile Gly Lys Phe Ile Arg Lys Thr Ser Ile Asp Glu Leu Pro Gln																																							
285										290										295										300									
ttc tat aat gtt tta aaa ggt gat atg agt tta gta gga aca cgc cct																									1564														
Phe Tyr Asn Val Leu Lys Gly Asp Met Ser Leu Val Gly Thr Arg Pro																																							
305										310										315																			
ccc aca gtt gat gaa tat gaa aag tat aat tca acg cag aag cga cgc																									1612														
Pro Thr Val Asp Glu Tyr Lys Tyr Asn Ser Thr Gln Lys Arg Arg																																							
320										325										330																			
ctt agt ttt aag cca gga atc act ggt ttg tgg caa ata tct ggt aga																									1660														
Leu Ser Phe Lys Pro Gly Ile Thr Gly Leu Trp Gln Ile Ser Gly Arg																																							
335										340										345																			
aat aat att act gat ttt gat gaa atc gta aag tta gat gtt caa tat																									1708														
Asn Asn Ile Thr Asp Phe Asp Glu Ile Val Lys Leu Asp Val Gln Tyr																																							
350										355										360																			
atc aat gaa tgg tct att tgg tca gat att aag att att ctc cta acg																									1756														
Ile Asn Glu Trp Ser Ile Trp Ser Asp Ile Lys Ile Ile Leu Leu Thr																																							
365										370										375										380									
cta aag gta gtt tta ctc ggg aca gga gct aag taaaggtaag gtttgaaagg																									1809														
Leu Lys Val Val Leu Leu Gly Thr Gly Ala Lys																																							
385										390																													
aatata atg aaa att tgt ctg gtt ggt tca agt ggt ggt cac cta gca																									1857														
Met Lys Ile Cys Leu Val Gly Ser Ser Gly Gly His Leu Ala																																							
395										400										405																			
cac ttg aac ctt ttg aaa ccc att tgg gaa aaa gaa gat agg ttt tgg																									1905														
His Leu Asn Leu Leu Lys Pro Ile Trp Glu Lys Glu Asp Arg Phe Trp																																							
410										415										420																			
gta act ttt gat aaa gaa gat gct agg agt att cta aga gaa gag att																																							



Val	Tyr	His	Cys	Phe	Phe	Pro	Thr	Asn	Arg	Asn	Val	Lys	Asn	Leu	Val	
<div>440</div> <div>445</div> <div>450</div>																
aaa	aat	act	att	cta	gct	ttt	aag	gtc	ctt	aga	aaa	gaa	aga	cca	gat	2049
Lys	Asn	Thr	Ile	Leu	Ala	Phe	Lys	Val	Leu	Arg	Lys	Glu	Arg	Pro	Asp	
<div>455</div> <div>460</div> <div>465</div>																
ggt	atc	ata	tca	tct	ggc	gcc	gct	gta	gca	gta	cca	ttc	ttt	tat	att	2097
Val	Ile	Ile	Ser	Ser	Gly	Ala	Ala	Val	Ala	Val	Pro	Phe	Phe	Tyr	Ile	
<div>470</div> <div>475</div> <div>480</div> <div>485</div>																
ggt	aag	tta	ttt	ggc	tgt	aag	acc	gtt	tat	ata	gag	gtt	ttc	gac	agg	2145
Gly	Lys	Leu	Phe	Gly	Cys	Lys	Thr	Val	Tyr	Ile	Glu	Val	Phe	Asp	Arg	
<div>490</div> <div>495</div> <div>500</div>																
ata	gat	aaa	cca	act	ttg	aca	gga	aaa	tta	gtg	tat	cct	gta	aca	gat	2193
Ile	Asp	Lys	Pro	Thr	Leu	Thr	Gly	Lys	Leu	Val	Tyr	Pro	Val	Thr	Asp	
<div>505</div> <div>510</div> <div>515</div>																
aaa	ttt	att	gtt	cag	tgg	gaa	gaa	atg	aaa	aaa	gtt	tat	cct	aag	gca	2241
Lys	Phe	Ile	Val	Gln	Trp	Glu	Glu	Met	Lys	Lys	Val	Tyr	Pro	Lys	Ala	
<div>520</div> <div>525</div> <div>530</div>																
att	aat	tta	gga	gga	att	ttt	ta	atg	att	ttt	gtc	aca	gta	ggg	aca	2288
Ile	Asn	Leu	Gly	Gly	Ile	Phe	Met	Ile	Phe	Val	Thr	Val	Gly	Thr		
<div>535</div> <div>540</div> <div>545</div>																
cat	gaa	cag	cag	ttc	aac	cgt	ctt	att	aaa	gaa	gtt	gat	aga	tta	aaa	2336
His	Glu	Gln	Gln	Phe	Asn	Arg	Leu	Ile	Lys	Glu	Val	Asp	Arg	Leu	Lys	
<div>550</div> <div>555</div> <div>560</div>																
ggg	aca	ggt	gct	att	gat	caa	gaa	gtg	ttc	att	caa	acg	ggt	tac	tca	2384
Gly	Thr	Gly	Ala	Ile	Asp	Gln	Glu	Val	Phe	Ile	Gln	Thr	Gly	Tyr	Ser	
<div>565</div> <div>570</div> <div>575</div> <div>580</div>																
gac	ttt	gaa	cct	cag	aat	tgt	cag	tgg	tca	aaa	ttt	ctc	tca	tat	gat	2432
Asp	Phe	Glu	Pro	Gln	Asn	Cys	Gln	Trp	Ser	Lys	Phe	Leu	Ser	Tyr	Asp	
<div>585</div> <div>590</div> <div>595</div>																
gat	atg	aac	tct	tac	atg	aaa	gaa	gct	gag	att	gtt	atc	aca	cac	ggc	2480
Asp	Met	Asn	Ser	Tyr	Met	Lys	Glu	Ala	Glu	Ile	Val	Ile	Thr	His	Gly	
<div>600</div> <div>605</div> <div>610</div>																
ggt	cca	gca	acg	ttt	atg	aat	gca	gtt	tct	aaa	ggg	aaa	aaa	act	att	2528
Gly	Pro	Ala	Thr	Phe	Met	Asn	Ala	Val	Ser	Lys	Gly	Lys	Lys	Thr	Ile	
<div>615</div> <div>620</div> <div>625</div>																

gtg gtt cct aga caa gaa cag ttt gga gag cat gtg aat aat cat cag	2576
Val Val Pro Arg Gln Glu Gln Phe Gly Glu His Val Asn Asn His Gln	
630 635 640	
gtg gat ttt ttg aaa gag tta ttc ttg aaa tat gag tta gat tat att	2624
Val Asp Phe Leu Lys Glu Leu Phe Leu Lys Tyr Glu Leu Asp Tyr Ile	
645 650 655 660	
ttg aat atc agt gaa tta gag aat att att aag gaa aaa aat ata tct	2672
Leu Asn Ile Ser Glu Leu Glu Asn Ile Ile Lys Glu Lys Asn Ile Ser	
665 670 675	
act agt aaa gta ata tca caa aac aat gat ttt tgt tcc tct ttc aaa	2720
Thr Ser Lys Val Ile Ser Gln Asn Asn Asp Phe Cys Ser Ser Phe Lys	
680 685 690	
aat gaa ctt tct aaa cta ttt gaa taaatatatt ttgttgagaa aaaaaattga	2774
Asn Glu Leu Ser Lys Leu Phe Glu	
695 700	
aattaactat caatccaag tattttgttaa taggaggaat ttctgcttta acctatttt	2834
caaagcca atg caa ctt ttg tta ctt tta gca tta ata gtt tta ctt att	2884
Met Gln Leu Leu Leu Leu Leu Ala Leu Ile Val Leu Leu Ile	
705 710	
tgt agt agt tat aat gaa aaa atg aaa ttt tta aat atg gct gaa att	2932
Cys Ser Ser Ser Tyr Asn Glu Lys Met Lys Phe Leu Asn Met Ala Glu Ile	
715 720 725 730	
ttt ttc att gta ttt tat atg gtt tat tta gta tca ata gta tta aat	2980
Phe Phe Ile Val Phe Tyr Met Val Tyr Leu Val Ser Ile Val Leu Asn	
735 740 745	
tcg tta ttt aga agt cca gaa ttt cat aga gtc att gct gca ttc aat	3028
Ser Leu Phe Arg Ser Pro Glu Phe His Arg Val Ile Ala Ala Phe Asn	
750 755 760	
tca ctg gca gta ggg gtt gtg tcc tta tta ttt tac cat tac tat aag	3076
Ser Leu Ala Val Gln Val Val Ser Leu Leu Phe Tyr His Tyr Tyr Lys	
765 770 775	
aat act aat att gaa tta aca aaa ttg cta aaa tca ttt ttg ttt aat	3124
Asn Thr Asn Ile Glu Leu Thr Lys Leu Leu Lys Ser Phe Leu Phe Asn	
780 785 790	
gca att att ttg ttt tgt tta gga ttt cta tat tat tat gcc ata tat	3172

Ala Ile Ile Leu Phe Cys Leu Gly Phe Leu Tyr Tyr Tyr Ala Ile Tyr	795	800	805	810
ttt gat gta gag aat gta agt ctt ttt gga aga aat tta att gga tca	3220			
Phe Asp Val Glu Asn Val Ser Leu Phe Gly Arg Asn Leu Ile Gly Ser		815	820	825
gat tgg ata aat ggg atg cat acg cag aga gca atg gct ttc ttt gaa	3268			
Asp Trp Ile Asn Gly Met His Thr Gln Arg Ala Met Ala Phe Phe Glu		830	835	840
tat tca aat ctt ata ata ccc tta act atc ata act aat ata tat ata	3316			
Tyr Ser Asn Leu Ile Ile Pro Leu Thr Ile Ile Thr Asn Ile Tyr Ile		845	850	855
tat ata tat att aag caa aga tat agc tca ggg atg atg ata ctc ggt	3364			
Tyr Ile Tyr Ile Lys Gln Arg Tyr Ser Ser Gly Met Met Ile Leu Gly		860	865	870
gct ctt ctc tcc act att ata cta ccc atc ggg tct gga tct aga gct	3412			
Ala Leu Leu Ser Thr Ile Ile Leu Pro Ile Gly Ser Gly Ser Arg Ala		875	880	885
ggt att ata gtt gtg cta cta cag gtt ata att tta ttg ttg aat aca	3460			
Gly Ile Ile Val Val Leu Leu Gln Val Ile Ile Leu Leu Leu Asn Thr		895	900	905
att gta ata aaa aga caa acg ata aga ttt ttc ctg tat tta gtt ccg	3508			
Ile Val Ile Lys Arg Gln Thr Ile Arg Phe Phe Leu Tyr Leu Val Pro		910	915	920
ata cta ata tta cta tta gtg ata tta cgt ttt gat aat ttg gtg agc	3556			
Ile Leu Ile Leu Leu Leu Val Ile Leu Arg Phe Asp Asn Leu Val Ser		925	930	935
ata tat aat aga ata atc aat ttg cgg tcg gga agt agt gaa tct aga	3604			
Ile Tyr Asn Arg Ile Ile Asn Leu Arg Ser Gly Ser Ser Glu Ser Arg		940	945	950
ttt tct ttg tac aag gat acc gta cac tca gta att act gac tca cta	3652			
Phe Ser Leu Tyr Lys Asp Thr Val His Ser Val Ile Thr Asp Ser Leu		955	960	965
ttt ctg gga aaa ggt gta aaa gaa ttg tgg tta aat agt gat tta cca	3700			
Phe Leu Gly Lys Gly Val Lys Leu Leu Trp Leu Asn Ser Asp Leu Pro		975	980	985

cta gga tgc cat tgc acc tac ata ggt tat ttc tat aaa act ggc cta	3748
Leu Gly Ser His Ser Thr Tyr Ile Gly Tyr Phe Tyr Lys Thr Gly Leu	
990 995 1000	
ttt gga cta ata aat gtg att tta ggt ttg ttt cta att ctt att agc	3796
Phe Gly Leu Ile Asn Val Ile Leu Gly Leu Phe Leu Ile Leu Ile Ser	
1005 1010 1015	
att atc aag gaa gct aaa aag tca gat ttc tat tat gag ata gta ggg	3844
Ile Ile Lys Glu Ala Lys Lys Ser Asp Phe Tyr Tyr Glu Ile Val Gly	
1020 1025 1030	
tct gtc ata ctc cta ttt tca ttt ttt gca ctt gaa gat att gat ggc	3892
Ser Val Ile Leu Leu Phe Ser Phe Phe Ala Leu Glu Asp Ile Asp Gly	
1035 1040 1045 1050	
gcc aat tgg ctc att att ttt gtc ttt aca gtg ttg gga att tta gaa	3940
Ala Asn Trp Leu Ile Ile Phe Val Phe Thr Val Leu Gly Ile Leu Glu	
1055 1060 1065	
aat aag gat ttc tat agt caa ctt aaa agg tgg gaa agt ta atg gaa	3987
Asn Lys Asp Phe Tyr Ser Gln Leu Lys Arg Trp Glu Ser Met Glu	
1070 1075 1080	
aaa caa ata ctt gtt tct atc gtt ata cct ata tac aac tgc gaa gca	4035
Lys Gln Ile Leu Val Ser Ile Val Ile Pro Ile Tyr Asn Ser Glu Ala	
1085 1090 1095	
tat ctt aaa gaa tgc gtg caa tcc gtc cta caa cag act cat tca ttg	4083
Tyr Leu Lys Glu Cys Val Gln Ser Val Leu Gln Gln Thr His Ser Leu	
1100 1105 1110	
ata gaa gtt ata ctg att aat gat gga tcc act gat aat agt gga gaa	4131
Ile Glu Val Ile Leu Ile Asn Asp Gly Ser Thr Asp Asn Ser Gly Glu	
1115 1120 1125	
att tgt gat aat tta tct caa aaa gac gat cgc ata ctt gta ttt cat	4179
Ile Cys Asp Asn Leu Ser Gln Lys Asp Asp Arg Ile Leu Val Phe His	
1130 1135 1140 1145	
aaa aaa aat gga ggg gta tct tgc gca agg aac cta ggt ctt gat aaa	4227
Lys Lys Asn Gly Gly Val Ser Ser Ala Arg Asn Leu Gly Leu Asp Lys	
1150 1155 1160	
tcc aca ggc gaa ttc ata acg ttt gta gat agt gat gat ttt gta gca	4275
Ser Thr Gly Glu Phe Ile Thr Phe Val Asp Ser Asp Phe Val Ala	
1165 1170 1175	

cgc aat ata att gaa ata atg tta aaa aat tta atc act gag gat gct Pro Asn Ile Ile Glu Ile Met Leu Lys Asn Leu Ile Thr Glu Asp Ala 1180 1185 1190	4323
gat ata gca gaa gta gat ttt gat att tcg aat gag aga gat tat aga Asp Ile Ala Glu Val Asp Phe Asp Ile Ser Asn Glu Arg Asp Tyr Arg 1195 1200 1205	4371
aag aaa aaa aga cga aac ttt tat aag gtc ttt aaa aac aat aat tct Lys Lys Lys Arg Arg Asn Phe Tyr Lys Val Phe Lys Asn Asn Asn Ser 1210 1215 1220 1225	4419
tta aaa gaa ttt tta tca ggt aat aga gtg gaa aat att gtt tgt aca Leu Lys Glu Phe Leu Ser Gly Asn Arg Val Glu Asn Ile Val Cys Thr 1230 1235 1240	4467
aaa tta tat aaa aaa agt ata att ggt aac ttg agg ttt gat gag aat Lys Leu Tyr Lys Lys Ser Ile Ile Gly Asn Leu Arg Phe Asp Glu Asn 1245 1250 1255	4515
tta aaa att ggt gag gat tta ctt ttt aat tgt aaa att tta tgt caa Leu Lys Ile Gly Glu Asp Leu Leu Phe Asn Cys Lys Ile Leu Cys Gln 1260 1265 1270	4563
gag cac tgc ata gtc gta gat acg act tct tcc ttg tac acc tat cgc Glu His Cys Ile Val Val Asp Thr Thr Ser Ser Leu Tyr Thr Tyr Arg 1275 1280 1285	4611
atc gta aag act tct gca atg aat cag gag ttc aac gaa aat tca tta Ile Val Lys Thr Ser Ala Met Asn Gln Glu Phe Asn Glu Asn Ser Leu 1290 1295 1300 1305	4659
gat ttt ata aca att ttt aat gaa ata agc agt att gtt cct gca aaa Asp Phe Ile Thr Ile Phe Asn Glu Ile Ser Ser Ile Val Pro Ala Lys 1310 1315 1320	4707
tta gct aat tat gtt gaa gcg aaa ttt tta aga gaa aag gta aag tgt Leu Ala Asn Tyr Val Glu Ala Lys Phe Leu Arg Glu Lys Val Lys Cys 1325 1330 1335	4755
ctc cga aaa atg ttt gaa tta ggt agt aat att gac agt aaa atc aaa Leu Arg Lys Met Phe Glu Leu Gly Ser Asn Ile Asp Ser Lys Ile Lys 1340 1345 1350	4803
tta caa cga gag att ttt ttc aaa gat gtt aaa tta tac cct ttc tat Leu Gln Arg Glu Ile Phe Phe Lys Asp Val Lys Leu Tyr Pro Phe Tyr	4851

1355

1360

1365

aaa gcg gtt aag tac tta tca tta aag gga tta ttg agt att tac tta 4899  
Lys Ala Val Lys Tyr Leu Ser Leu Lys Gly Leu Leu Ser Ile Tyr Leu  
1370 1375 1380 1385

atg aaa tgt tca ccc atc ttg tat ata aaa tta tat gac agg ttt caa 4947  
Met Lys Cys Ser Pro Ile Leu Tyr Ile Lys Leu Tyr Asp Arg Phe Gln  
1390 1395 1400

aaa cag taagtaatca aaaattaaat taactcaatt accttttaa ttataggagt 5003  
Lys Gln

tgaaa atg aat tat agt atc att atg tgc gta tat aat gag cct tta aat 5053  
Met Asn Tyr Ser Ile Ile Met Ser Val Tyr Asn Glu Pro Leu Asn  
1405 1410 1415

tat gtg aga gat tca gta gaa tct ata tta aat caa acg ctt act gat 5101  
Tyr Val Arg Asp Ser Val Glu Ser Ile Leu Asn Gln Thr Leu Thr Asp  
1420 1425 1430

ttt gag ttc ata att gtc att gat aat cca agt aga ggt gat tta aag 5149  
Phe Glu Phe Ile Ile Val Ile Asp Asn Pro Ser Arg Gly Asp Leu Lys  
1435 1440 1445 1450

caa ttc tta aca gaa tat tca gtt gta gat aat aga ata aaa atc ttg 5197  
Gln Phe Leu Thr Glu Tyr Ser Val Val Asp Asn Arg Ile Lys Ile Leu  
1455 1460 1465

ctt aat gaa gaa aat att ggt tta gca tca agt ttg aac aaa ggg gtg 5245  
Leu Asn Glu Glu Asn Ile Gly Leu Ala Ser Ser Leu Asn Lys Ala Val  
1470 1475 1480

aaa att tct aag gga gaa tat att ttt aga atg gat gct gat gat att 5293  
Lys Ile Ser Lys Gly Glu Tyr Ile Phe Arg Met Asp Ala Asp Asp Ile  
1485 1490 1495

tca tat cca agt aga ttt gat aag caa att cgt ttt atg gag gaa aat 534  
Ser Tyr Pro Ser Arg Phe Asp Lys Gln Ile Arg Phe Met Glu Glu Asn  
1500 1505 1510

tca ttg gat ttc tca gca act cta ata gaa ttg ata gac caa aaa gga 5389  
Ser Leu Asp Phe Ser Ala Thr Leu Ile Glu Leu Ile Asp Gln Lys Gly  
1515 1520 1525 1530

aat tta gta tat aaa caa cga gaa agt aat aaa ata tac tta act aat 5437  
Asn Leu Val Tyr Lys Gln Arg Glu Ser Asn Lys Ile Tyr Leu Thr Asn

	1535		1540		1545	
gat ata cgg aag atg tta ttg aat aga tot ata ctt gcc cac cca acg						5485
Asp Ile Arg Lys Met Leu Leu Asn Arg Ser Ile Leu Ala His Pro Thr						
	1550		1555		1560	
tgg tgc gta aaa aag aaa gtt ttc gat aag tta atg gga tat aga gat						5533
Trp Cys Val Lys Lys Lys Val Phe Asp Lys Leu Met Gly Tyr Arg Asp						
	1565		1570		1575	
tta gta cct gtt gaa gat tat gat ttt gca ata aga gga gct ctg gct						5581
Leu Val Pro Val Glu Asp Tyr Asp Phe Ala Ile Arg Gly Ala Leu Ala						
	1580		1585		1590	
gat ttc aaa atc ggc tta ctc aat aaa gta ctt tta cag tat aga tta						5629
Asp Phe Lys Ile Gly Leu Leu Asn Lys Val Leu Leu Gln Tyr Arg Leu						
	1595		1600		1605	1610
aac gag aat gga ata tca caa acc aat aag ttt aag caa tat att tac						5677
Asn Glu Asn Asn Gly Ile Ser Gln Thr Asn Lys Phe Lys Gln Tyr Ile Tyr						
	1615		1620		1625	
tca gct att tta caa gat ttt tat aaa gaa aaa tct tat att gat atc						5725
Ser Ala Ile Leu Gln Asp Phe Tyr Lys Glu Lys Ser Tyr Ile Asp Ile						
	1630		1635		1640	
aca aaa att act aat tac ttt caa gag tat gtg ata aag aaa cgc tat						5773
Thr Lys Ile Thr Asn Tyr Phe Gln Glu Tyr Val Ile Lys Lys Arg Tyr						
	1645		1650		1655	
act cag caa gag ctc tct aaa tat ttt gag cta aaa tct acc cct agt						5821
Thr Gln Gln Glu Leu Ser Lys Tyr Phe Glu Leu Lys Ser Thr Pro Ser						
	1660		1665		1670	
att act att aga aaa cta tat att tgt tta tat tta tac ttt aag tct						5869
Ile Thr Ile Arg Lys Leu Tyr Ile Cys Leu Tyr Leu Tyr Phe Lys Ser						
	1675		1680		1685	1690
ccc ttg gtt agg agg tta tta ata aat gat att aat att tta gta ctg						5917
Pro Leu Val Arg Arg Leu Leu Ile Asn Asp Ile Asn Ile Leu Val Leu						
	1695		1700		1705	
aaa ttg ttt gga gga gag aaa caa agt gac taatagaaaa atttatgtat						5967
Lys Leu Phe Gly Gly Glu Lys Gln Ser Asp						
	1710		1715			
gtcatactct ttatcatitaa ttgatttggt tatataaaga aaagatatat tcaaatttag						6027





